

EXHIBIT A

**Invention of
"A Distributed Persistence Framework for e-Commerce and m-
Commerce Java™ Object Models"**

Atul Elhence, Ramesh Venkataramalah and Michael Harold

Objective: To record the intellectual property of our invention related to Java Object Model Persistence Framework for transactional systems in a distributed environment for electronic commerce (e-Commerce) and mobile commerce (m-Commerce). We have created a standards-based Distributed Persistence Framework (DPF) that will aid in persisting components in any peer-to-peer transaction scenario. This service will store, retrieve, query and modify Java objects in a business transaction very much similar to traditional client-server/first-generation Internet systems environment but with less complexity and more reusable techniques.

In particular, our invention has following characteristics/advantages:

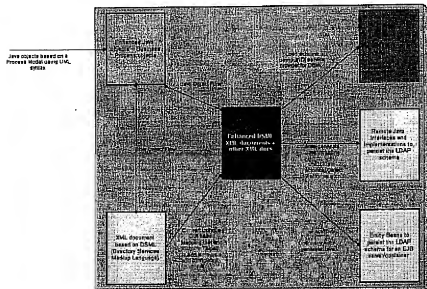
- **Distributability-** The framework works the way the Internet works: Our framework will support PDA's and hand-held wireless devices over existing 2G or next-generation 3G wireless networks supporting e-commerce/m-commerce business transactions. Provides full support for the Distributed paradigm of the Internet, as data can be distributed and replicated across multiple LDAP servers.
- **Advanced-** Minimize or eliminate traditional client-server based "Object-to-Relational" mapping (OR Mapping) involved in the use of RDBMS.
- **Flexibility and Extensibility-** An object model in a software system mirrors a real-world scenario of a business transaction and any data required for that transaction. In a traditional software system, any change in the business processes (for business reasons or performance related) results in OR Mapping changes. Such a change produced by the object model for any reason, in our solution, is automated and seamlessly integrated with the persistence framework.
- **Standards Support-** This invention utilizes methods to integrate with existing standards and protocols for easier access to other technologies. Auto-generates Remote Interfaces and Implementations, and optionally Entity Beans for an Enterprise JavaBeans (EJB) Server. Integrates with well known industry standards like:
 - JNDI (Java Naming and Directory Interface) and Lightweight Directory Access Protocol (LDAP).
 - XML (Extensible Markup Language) via DMSL (Directory Standards Markup Language).

Terminology-

- **m-Commerce:** Mobile commerce, a next generation of Internet e-commerce solution based on wireless, handheld/embedded devices, which supports mobility.
- **Persistence:** The enduring storage of the state of an object.
- **Storage Mechanisms:** A logical device providing the lower level storages. Few well-known storage mechanisms are:
 - Object Databases - Efficient but not distributable.
 - Relational Databases- Prevalent but neither efficient nor distributable.
 - Hierarchical Databases- Distributable, Secure but provides no transactional services.

- **OR Mapping:** A mapping between a class and its persistent store (for example, a table in a database), and between object attributes and the fields (columns) in a record.
- **Object Identity:** A unique object identifier used for relating database records to objects.
- **Serialization and deserialization:** A robust and standard Java mechanism to store and retrieve binary files (objects) through a standard interface.
- **Caches:** The framework utilizes a cache (memory) to store URI/URL's of serialized objects and its key attributes/identifiers. This enhances the performance related to read operation in storage mechanism.
- **Metadata:** Objects having complex structures and associations with other lower level objects. Acts as a gateway for lower level objects.
- **Transaction State of Objects:** State of an object in terms of their relationship to the current transaction.
- **Transaction Operation:** Commit and rollback operations.
- **Query:** Finding an attribute or value of a Java object based on some criteria.

Fig 1: Schematic showing Distributed Persistence Framework (DPF), its components and flow.



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Class	Subclass
ISSUE CLASSIFICATION	



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POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION			
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PATENT APPLICATION



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CONTENTS

1. Application papers.

2. Request for access 11/27-07

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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

06/31/2000 RHPR151 00000062 100447 60228537
01 FC:114 150.00 CH

PTO-1556
(5/87)

U.S. GPO: 1999-439-082/19144

US907 U.S. PTO
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8-29-00

PTO/SB/16 (6-98)

Approved for use through 04/1/98 OMB 0551-0037
Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 C.F.R. § 1.53(e)

Docket Number: 41276-22

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TITLE OF THE INVENTION: A Distributed Persistence Framework for e-Commerce and m-Commerce Java™ Object Models			
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(STATE) TEXAS	(ZIP CODE) 75302-2799	(COUNTRY) USA	
ENCLOSED APPLICATION PARTS (check all that apply):			
<input checked="" type="checkbox"/> Specification Number of Pages 2		<input type="checkbox"/> Small Entity Statement	
<input type="checkbox"/> Drawing(s) Number of Figures		<input type="checkbox"/> Other (specify)	
<input type="checkbox"/> A check in the amount of \$ is enclosed to cover the provisional application filing fees.			Filing Fees Due for Provisional Application: <input checked="" type="checkbox"/> \$150.00 <input type="checkbox"/> \$75.00
<input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge or credit any over or under payments of filing fees to Deposit Account Number: 10-0447			

Was the invention made by an agency of the United States Government or under a contract with an agency of the United States government?

☐ No.

☐ Yes, and the name of the U.S. Government agency and the government contract number(s) are:

Respectfully submitted,

SIGNATURE

Raymond Van Dyle

DATE August 28, 2000

NAME Raymond Van Dyle

REGISTRATION NO.
(if appropriate)

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☐ Additional inventors are being named on separately numbered sheets attached hereto.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

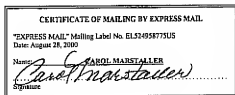
Atul Elhence, Ramesh Venkataramaiah and Michael Harold

For: A Distributed Persistence Framework for e-commerce and m-Commerce Java™ Object Models

35 U.S.C. § 370
60/226597
08/28/00

To:

Box Provisional Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231



Dear Sir:

TRANSMITTAL LETTER FOR A PROVISIONAL PATENT APPLICATION
UNDER 37 C.F.R. § 1.53(c)

- ☐ Transmitted herewith is a Provisional Patent Application under 37 C.F.R. § 1.53(c) as identified above.
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60/228,597

8-28-2000

Paper No. #2

I hereby request access under 37 CFR 1.14(a)(1)(iv) to the application file record of the above-identified ABANDONED application, which is not within the file jacket of a pending Continued Prosecution Application (CPA) (37 CFR 1.53(d)) and which is identified in, or to which a benefit is claimed, in the following document (as shown in the attachment):

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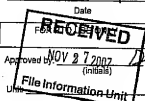
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 INFORMATION FOR NEW INVENTORS OF HOW TO APPLY FOR PATENTS
 BIR Data Sheet

SERIAL NUMBER 60/228,597	FILING DATE 08/28/2000 RULE -	CLASS -	GROUP ART UNIT -	ATTORNEY DOCKET NO. 41276-22
APPLICANTS Atul Eihence, Shreveport, LA ; Ramesh Venkataramalah, Shreveport, LA ; Michael Harold, Shreveport, LA ;				
** CONTINUING DATA *****				
** FOREIGN APPLICATIONS *****				
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 11/14/2000 -				
Foreign Priority claimed <input type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (a-d) conditions <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance Verified and Acknowledged <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance		STATE OR COUNTRY LA	SHEETS DRAWING -	TOTAL CLAIMS -
ADDRESS		INDEPENDENT CLAIMS		
Raymond Van Dyke Jenkins & Gilchrist P C 1445 Ross Avenue Ste 3200 Dallas, TX 75202-2799		-		
TITLE Distributed persistence framework for e-Commerce and m-Commerce Java TM object models				
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